UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,220	10/16/2003	Michael Joseph Carnevale	ROC920030232US1	9461

7590   07/12/2007

Robert R. Williams
IBM Corporation, Dept. 917
3605 Highway 52 North
Rochester, MN 55901-7829

EXAMINER
ANDREWS, LEON T

ART UNIT	PAPER NUMBER
2616	

MAIL DATE	DELIVERY MODE
07/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section

122(b), by another filed in the United States before the invention by the applicant for

patent or (2) a patent granted on an application for patent by another filed in the United

States before the invention by the applicant for patent, except that an international

application filed under the treaty defined in section 351(a) shall have the effects for

purposes of this subsection of an application filed in the United States only if the

international application designated the United States and was published under Article

21(2) of such treaty in the English language.

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by **Haydt** (Pub. No.: US

2004/0019882 A1)

Regarding Claim 1, Haydt discloses a method (methods, paragraph [0010], page 1, line 1)

comprising:

determining whether a number of buffers (at startup and any time all the receive buffers,

paragraph [0053], page 5, line 9) allocatable to a queue pair (the appropriate index from the

queue pair is added to a buffer key, paragraph [0035], page 3, lines 6-7) is greater than zero;

deciding whether a number of buffers allocated to an operation type (receive buffers all

in a single operation, paragraph [0053], page 5, lines 11-12) is less than a maximum (buffer

range fits within the range specified by the key table entry, paragraph [0057], page 5, lines 1-2);

and

allocating a buffer (buffer, paragraph [0035], page 3, line 2) to the queue pair if the queue

pair requests the buffer for an operation (operations to process increases, paragraph [0010], page

1, lines 4-5) having the operation type (data communication operations, paragraph [0010], page

1, line 3) and the determining and the deciding are true.

Regarding Claim 2, Haydt discloses the method of claim 1, further comprising:

receiving a validate request (valid entries, paragraph [0047], page 4, line 1) associated

with a data transfer (data transfer, paragraph [0047], page 4, line 6) that uses the buffer.

Regarding Claim 3, Haydt discloses the method of claim 2, further comprising:

determining whether a requester (Fig. 1, user mode implementation 130) of the data

transfer matches the queue pair.

Regarding Claim 4, Haydt discloses the method of claim 2, further comprising:

determining whether a type (operations to process increases, paragraph [0010], page 1,

lines 4-5) of the data transfer is valid for the operation type.

Regarding Claim 5, Haydt discloses the method of claim 1, wherein the determining further

comprises:

determining whether the number of buffers allocatable to the queue pair is greater than a

remaining size of the operation ({receive buffers all in a single operation, paragraph [0053], page

5, lines 11-12} – {operations to process increases, paragraph [0010], page 1, lines 4-5}).

Regarding Claim 6, Haydt discloses the method of claim 1, wherein the operation type is a

transmit (operations like sending {transmit} information, paragraph [0021], page 2, lines 3-4).

Regarding Claim 7, Haydt discloses the method of claim 1, wherein the operation type is a

receive (operations like receiving information, paragraph [0021], page 2, lines 3-4).

Regarding Claim 8, it is the corresponding apparatus claim to method **Claims 1 and 2**.

Therefore, it is rejected for the same reasons explained above.

Regarding Claim 9, it is the corresponding apparatus claim to method **Claim 3**. Therefore, it is

rejected for the same reasons explained above.

Regarding Claim 10, it is the corresponding apparatus claim to method **Claim 4**. Therefore, it is

rejected for the same reasons explained above.

Regarding Claim 11, it is the corresponding apparatus claim to method **Claim 5**. Therefore, it is

rejected for the same reasons explained above.

Regarding Claim 12, it is the corresponding apparatus claim to method **Claim 6**. Therefore, it is

rejected for the same reasons explained above.

Claim 12, the apparatus of claim 8, wherein the operation type is a transmit.

Regarding Claim 13, it is the corresponding apparatus claim to method **Claim 7**. Therefore, it is

rejected for the same reasons explained above.

Regarding Claim 14, Haydt discloses the apparatus of claim 8, further comprising:

means for deallocating the buffer if a requester (Fig. 1, user mode implementation 130)

matches the queue pair.

Regarding Claim 15, Haydt discloses an adapter (Fig. 1, 150) comprising:

a pool of a plurality of entries (valid entries, paragraph [0047], page 4, line 1); and

a controller (Fig. 2, 250) that allocates a plurality of buffers (at startup and any time all

the receive buffers, paragraph [0052], page 5, line 9) from the plurality of entries in response to

requests from a plurality of queue pairs (queue pairs, paragraph [0035], page 3, lines 4-5),

validates the plurality of buffers for a plurality of data transfers (data transfer, paragraph [0047],

page 4, line 6), and deallocates at least one of the plurality of buffers in response to a shutdown

of an associated at least one of the plurality of queue pairs (each queue pair has a buffer which is

queued for delivery when an event occurs and, the buffer is not returned until the driver responds

to the event, paragraph [0041], page 4, lines 1-11).

Regarding Claim 16, Haydt discloses the adapter of claim 15, wherein the controller further

stores status (Fig. 2, 230) in each of the plurality of entries, wherein the status comprises an

indication (Fig. 3A, 332) of whether each of the respective plurality of buffers is to be used for a

master or a target operation (operations to process increases, paragraph [0010], page 1, lines 4-

5).

Regarding Claim 17, Haydt discloses the adapter of claim 15, wherein the controller further

stores status in each of the plurality of entries, wherein the status comprises an indication (Fig.

3A, 332) of whether each of the respective plurality of buffers is to be used for a RDMA

(RDMA, paragraph [0047], page 4, line 3) or a send operation.

Regarding Claim 18, Haydt discloses the adapter of claim 15, wherein the controller further

stores status in each of the plurality of entries, wherein the status comprises an indication (Fig.

3A, 332) of whether each of the respective plurality of buffers is to be used for a read or a write

(RDMA read and write, paragraph [0047], page 4, line 2) operation.

Regarding Claim 19, Haydt discloses the adapter of claim 16, wherein the controller further

validates (key table index contains the information for validating the buffer, paragraph [0054],

page 5, lines 9-10) the plurality of buffers based on the status.

Regarding Claim 20, Haydt discloses the adapter of claim 17, wherein the controller further

validates the plurality of buffers based on the status.

Citation of Pertinent Prior Art

2.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Craddock et al. (Pub. No.: US 2003/0061417 A1) discloses infiniband work and

completion queue management via head and tail circular buffers with indirect work queue

entries.

Arndt et al. (Pun. No.: US 2003/0058875 A1) discloses infiniband work and

completion queue management via head only circular buffers.

Neal et al. (Pub. No.: US 2003/0093627 A1) discloses open format storage subsystem

apparatus and method.

Boyd et al. (Pub. No.: US 2004/0049600 A1) discloses memory management offload
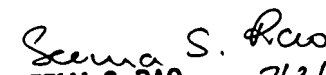
for RDMA enabled network adapters.

Conclusion

3.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Leon Andrews whose telephone number is (571) 270-1801. The

examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Rao S. Seema can be reached on (571) 272-3174. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Seema S. Rao
SEEMA S. RAO   7/3/07
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

LA/la   *L A*
June 20, 2007